DRAFTING AND DESIGN TECHNOLOGY Mechanical Drafting, 15.1300.40	
STANDARD 1.0—APPLY MEASUREMENT AND SCALE CONCEPTS IN DESIGN DRAFTING	
1.1	Identify types of measurement used in design drafting
1.2	Select proper measurement tools
1.3	Perform measurements with hand held instruments
1.4	Determine and apply appropriate scale
1.5	Transcribe illustrations accurately
STANDARD 2.0—INTERPRET ENGINEERING DOCUMENTS AND CONTROL DOCUMENTS	
2.1	Interpret dimensions, symbols, legends, scales, and directions/orientations
2.2	Analyze how content and information are communicated in schematics, blueprints, and technical drawings
2.3	Analyze schematics, blueprints, and technical drawings for clarity, completeness, and accuracy
2.4	Recognize cross-referencing on technical drawings
2.5	Identify and describe basic types of drawings by trade
2.6	Locate and interpret information on specific documents
2.7	Check prints for dimensional accuracy, completeness, and note detail
2.8	Compare schematics to dimensional drawings
2.9	Verify drawing elements
2.10	Identify conflicting data
STANDARD 3.0—CREATE TECHNICAL DRAWINGS	
3.1	Identify, select, and use fundamental drafting techniques for drawings
3.2	Demonstrate freehand lettering technique
3.3	Identify "Alphabet of Lines" by name, line type variation, order of usage and application on technical drawings
3.4	Create title blocks
3.5	Format borders
3.6	Apply notes and dimensions

3.7	Plot or print drawings using correct layout
3.8	Organize and maintain drawings and supporting documents
STANDARD 4.0—UTILIZE BASIC COMPUTER CONCEPTS, OPERATIONS, AND INFORMATION TECHNOLOGY APPLICATIONS	
4.1	Use computer hardware and input/output devices for design drafting problems
4.2	Apply basic commands of operating system software
4.3	Apply file and disk management techniques
4.4	Import and export data files using different formats (dxf, dxb, Tiff, gif, pcx, eps, spd, or other formats as required)
4.5	Prepare files for electronic transfer
4.6	Access and use the Internet for file transfer
4.7	Access and use a computer network for file management and transfer
STANDARD 5.0—USE A CADD/VDCM (VIRTUAL DESIGN AND CONSTRUCTION MODELING) SYSTEMS AND PROCEDURES	
5.1	Explore and determine applicability of CADD/VDCM systems to the project
5.2	Analyze drawings using CADD/VDCM software functions/commands
5.3	Use CADD/VDCM software commands to set up drawing scale, format, dimensioning, etc.
5.4	Apply layers/visible items, colors, line types, editing commands, and grouping techniques
5.5	Control entity properties
5.6	Incorporate standard parts, symbol libraries, and/or templates
5.7	Control viewing commands
5.8	Create and manipulate views by modifying coordinate system settings
5.9	Minimize a drawing file for storage and transmission
STANDARD 6.0—DETAIL PROJECTION VIEWS/COMPONENTS	
6.1	Determine views for projection (i.e., plan, top, front, etc.)
6.2	Identify, create, and place views for orthographic features
6.3	Identify, create, and place auxiliary views to determine true size, shape, and location of non-orthogonal features
6.4	Identify, create, and place appropriate section views

6.5	Construct full, half, and offset section of an object
6.6	Utilize various material hatch patterns in section views
STANDARD 7.0—EXPLORE AND DRAFT MECHANICAL DESIGN DRAFTING CONCEPTS AND PROBLEMS	
7.1d	Use manufacturing and machining terminology in context
7.2d	Use precision measuring equipment
7.3d	Solve design problems in trigonometry
7.4d	Use industry standards, codes, and regulations software for mechanical drafting to solve a problem
7.5d	Apply mechanical symbols to a drawing
7.6d	Prepare detail and assembly working drawings
7.7d	Prepare an engineering change order and revise the applicable drawings
STANDARD 8.0—DEMONSTRATE DESIGN DRAFTING CONCEPTS AS RELATED TO BASIC MANUFACTURING PROCESSES	
8.1d	Design and detail a foundry produced product
8.2d	Design and detail a machine tooled product
8.3d	Design and detail a welded product
8.4d	Design and detail a sheet metal part
8.5d	Prepare models for computer numerical control (CNC) processes
8.6d	Identify types of parts to be detailed (cast, machined, forged, sheetmetal, welded)
8.7d	Incorporate piping, welding, and instrumentation symbols in mechanical drawings
8.8d	Draft, locate, and label fasteners on production, assembly drawings, and parts lists
8.9d	Draft, locate, and label spring assemblies
8.10d	Draft, identify, and label characteristics and requirements of jig and fixture tooling
8.11d	Denote manufacturing treatments of materials in drawings
8.12d	Denote shop processes to be used
8.13d	Prepare bill of materials for drawings

STANDARD 9.0—INCORPORATE GEOMETRIC DIMENSIONING AND TOLERANCING (GDT) STANDARDS	
9.1d	Determine appropriate datum features
9.2d	Use standard fit tables to determine tolerances and fits
9.3d	Calculate tolerance stackups
9.4d	Interpret tolerance dimensions
9.5d	Dimension fit tolerances
9.6.d	Apply dimensioning rules correctly and in compliance with ASME Y14 standards
9.7c	Apply metric and/or dual dimensions to drawing in compliance with ASME Y14 standards
9.8d	Select/set/draw appropriate dimension features (i.e., arrowhead, text sizes, extension lines)
9.9d	Draw/select appropriate dimensioning practices (e.g., conventional, tabular, datum, ordinate, aligned, rectangular coordinate, polar systems)
9.10d	Apply geometric tolerances (e.g., true position, form, material conditions, datum points)
STANDARD 10.0—DRAFT ASSEMBLIES OF COMPONENTS	
10.1d	Draft an aligned section
10.2d	Draft an assembly section
10.3d	Draft a cross section
10.4d	Draft intersections
10.5d	Draft developments
10.6d	Draft revolution drawings
10.7d	Draft patterns, including radial and parallel line patterns